

FUNCTIONAL/NON-FUNCTIONAL REQUIREMENTS USE CASES AND USER STORIES

Functional Requirements:

1. User Registration and Authentication:

- Allows users to create an account with secure credentials (e.g., email or phone verification).
- Provides login and password recovery options to ensure easy and secure access.

2. Real-Time Parking Space Availability:

- Displays updated availability of parking spots based on real-time data.
- Allows users to filter parking options by location, distance, and availability status.

3. Reservation System:

- Enables users to pre-book parking spaces with options for date, time, and location.
- Provides the flexibility to modify or cancel reservations based on availability.

4. Payment Processing:

- Integrates secure payment options, including credit/debit cards and digital wallets.
- Supports auto-billing and payment history tracking for convenient future bookings.

5. Booking Confirmation:

- Sends instant confirmation via app notification, SMS, or email, including booking details.
- Provides a digital receipt with all transaction and reservation details for reference.

6. Admin Dashboard:

- Offers a centralized view for administrators to monitor parking lot occupancy and reservations.
- Displays revenue data, booking trends, and user activity for effective management.

7. Parking Instructions and Reminders:

- Provides GPS-based directions to guide users to their reserved parking spots.
- Sends reminders about approaching reservation times and expiry notifications to prevent overstay.

8. Loyalty Program:

- Awards points or discounts for frequent bookings to encourage user retention.
- Offers users the ability to track loyalty

Non-Functional Requirements:

- 1. Performance:** The system should respond quickly to user queries and load data efficiently.
- 2. Reliability:** Ensure high uptime and data reliability to avoid disruptions in crop storage and retrieval.
- 3. Scalability:** The system should be able to accommodate more users and warehouses as the platform grows.
- 4. Usability:** The user interface should be intuitive and user-friendly for both farmers and warehouse owners.
- 5. Data Privacy:** Protect user information and comply with applicable data privacy laws.
- 6. Availability:** Ensure that the system is available 24/7, with minimal downtime for maintenance.
- 7. Data Backup:** Regularly backup data to prevent data loss in case of system failures.
- 8. Scalable Database:** Use a scalable and robust database system to store user and inventory data.
- 9. Mobile Accessibility:** Ensure that the system is accessible and userfriendly on mobile devices.
- 10. Cost-Effective:** Develop and maintain the system in a cost-effective manner to minimize operational expenses.

PRODUCT BACKLOG

USER STORIES	ACCEPTANCE CRITERIA
<p>1. Secure Login and Authentication</p> <ul style="list-style-type: none">● As a Parking Lot User,● I want to log in securely using my credentials,● so that my parking sessions and payment information are protected. <p>Priority: High</p>	<ul style="list-style-type: none">● Users should be able to log in using secure methods, including passwords, OTP verification, or biometric authentication.● The system should validate credentials and prevent unauthorized access attempts.● In case of failed login attempts, users should be notified, and account recovery options should be provided.
<p>2. Reserve/Book a Slot</p> <ul style="list-style-type: none">● As a Parking Lot User,● I want to reserve or book a parking slot,● so that I can ensure that I have a parking space when I arrive. <p>Priority: High</p>	<ul style="list-style-type: none">● The system must display whether slots are available or not.● The system should generate a booking reference number.● The user receives a confirmation via email/SMS with the booking details.
<p>3. Parking Slot Entry Reminder</p> <ul style="list-style-type: none">● As a Parking Lot User,● I want to receive a parking slot entry reminder,● so that I am reminded to use the reserved slot before the time expires.	<ul style="list-style-type: none">● The system should automatically send a reminder to the user before the reserved time starts.● The reminder should include details such as the parking slot number and reservation time.

<p>Priority : High</p>	<ul style="list-style-type: none"> ● The reminder should be sent via the user's preferred communication method (email/SMS).
<p>4. Entrance and Exit</p> <ul style="list-style-type: none"> ● As a Parking Lot User, ● I want to be able to enter and exit the parking lot using the system, ● so that I can smoothly access the parking facilities. <p>Priority: High</p>	<ul style="list-style-type: none"> ● The system should validate the user's reservation upon entry. ● The user should be able to enter the parking lot by using an entry token. ● The system should log the entry and exit times. ● The user should be notified of successful entry and exit.
<p>5. Extend Slot Timing</p> <ul style="list-style-type: none"> ● As a Parking Lot User, ● I want to extend my parking slot timing, ● so that I can park my vehicle for a longer duration if needed. <p>Priority : Medium</p>	<ul style="list-style-type: none"> ● The user should be able to extend the parking time through the system before the current time expires. ● The system should check the availability of the slot for the extended time. ● The user must receive confirmation of the extension along with the updated total charge.
<p>6. End Parking Slot/Checkout Early</p> <ul style="list-style-type: none"> ● As a Parking Lot User, ● I want to end the parking slot/checkout early, ● so that I can leave before time if needed. <p>Priority : Medium</p>	<ul style="list-style-type: none"> ● The user should be able to leave the parking spot or end the parking session earlier than planned. ● The system should allow early checkout without adjusting the payment. ● The user should receive a confirmation of the early checkout.

<p>7. Payment</p> <ul style="list-style-type: none"> ● As a Parking Lot User, ● I want to make a payment easily through the system, ● so that I can complete my parking reservation or exit without issues. <p>Priority : Medium</p>	<ul style="list-style-type: none"> ● The payment process should be smooth and secure. ● The system should support payment methods. ● The user should receive a receipt immediately after payment. ● The payment should be linked to the user's account and reservation details.
<p>8. Transaction Failure Handling</p> <ul style="list-style-type: none"> ● As a Parking Lot User, ● I want to be notified of any transaction failures, ● so that I can take corrective action to ensure payment goes through. <p>Priority : Medium</p>	<ul style="list-style-type: none"> ● The system should detect transaction failures and notify the user immediately. ● The notification should include details about the failure and possible steps to retry the transaction. ● The user should be able to retry the payment process without losing the reservation or current session.
<p>9. Accessible Parking for Disabled Users</p> <ul style="list-style-type: none"> ● As a disabled Parking Lot User, ● I want to access dedicated parking spots and assistance options, ● so that I can park easily without facing any accessibility issues. <p>Priority : Medium</p>	<ul style="list-style-type: none"> ● The system should provide dedicated parking slots for disabled users, marked clearly and accessible easily. ● Disabled users should have the option to request assistance during entrance or exit. ● The system should ensure that these spots are reserved only for disabled users with proper identification.

<p>10. Manage Employee Information</p> <ul style="list-style-type: none"> ● As a Parking Lot Owner, ● I want to manage employee information, ● so that I can keep track of the staff responsible for managing the parking lot. <p>Priority : Medium</p>	<ul style="list-style-type: none"> ● The system should allow the owner to add, edit, and remove employee information. ● The system should store information such as employee name, role, contact details, and shifts. ● The owner should be able to assign roles and responsibilities to employees. ● The system should generate an employee report that can be viewed or exported.
<p>11. View Dashboard</p> <ul style="list-style-type: none"> ● As a Parking Lot Owner, ● I want to view the dashboard, ● so that I can monitor parking lot usage, revenue, and other relevant data. <p>Priority : High</p>	<ul style="list-style-type: none"> ● The dashboard should display real-time data including the number of slots occupied, revenue generated, and upcoming reservations. ● The dashboard should be accessible via both desktop and mobile devices. ● The owner should be able to export the dashboard data into a report format.
<p>12. See Total Revenue</p> <ul style="list-style-type: none"> ● As a Parking Lot Owner, ● I want to see the total revenue generated by the parking lot, ● so that I can assess the financial performance of the parking facility. <p>Priority : Low</p>	<ul style="list-style-type: none"> ● The system should display total revenue generated over a selected period. ● The owner should be able to break down revenue by day, week, month, or custom date range. ● The revenue report should include details such as payment methods used and average revenue per slot.

	<ul style="list-style-type: none"> The owner should be able to generate and download the revenue report.
<p>13. Change Parking Rates</p> <ul style="list-style-type: none"> As a Parking Lot Owner, I want to change parking rates, so that I can adjust pricing according to demand or special events. <p>Priority : Medium</p>	<ul style="list-style-type: none"> The system should allow the owner to change parking rates for different time periods, days, or specific events. The owner should be able to preview the impact of the rate change on revenue before applying it. The system should notify users of any rate changes in advance.
<p>14. Verify User Actions and Monitor Parking Operations</p> <ul style="list-style-type: none"> As Security Personnel, I want to verify user actions through OTP verification and monitor parking operations, so that I can ensure secure and authorized access to the parking lot. <p>Priority : High</p>	<ul style="list-style-type: none"> Security Personnel should be able to view and monitor parking operations, including user entries and exits. They should verify user actions, such as booking, entrance, or exit, through OTP verification to ensure security. Security Personnel should have access to shared reports/logs for tracking activities and resolving issues. Alerts should be provided for any discrepancies or unauthorized actions to take appropriate measures.

15. Assist with Transaction Failure Handling

- As Security Personnel,
- I want to assist in handling transaction failures,
- so that I can help users resolve payment issues quickly.

Priority : **Medium**

- Security Personnel should be notified of transaction failures or issues with payments.
- They should have access to basic troubleshooting steps or be able to guide users to complete the transaction.
- Security Personnel should have a protocol for dealing with unresolved payment issues, including escalation or temporary permissions.